



SDMS Doc ID 166024

# Perchlorate Conference

March 18 & 19, 1999

at the

DOUBLE TREE

HOTEL

ONTARIO

*"Contamination in Your Back Yard?"*

# Perchlorate:

## Overview

**Perchlorate** is a man-made inorganic salt, used as an additive for solid rocket fuel, for military munitions, and also in the pyrotechnics industry. It is a very soluble and mobile contaminant in both groundwater and surface water supplies. The degradation rate of perchlorate in the environment is very slow. Perchlorate has the potential of impacting over 1 million people in Nevada, more than 1 million in Arizona and over 10 million people in California, as well as Native American tribes along the Colorado River. Although the environmental and public health problems of perchlorate have only recently been identified in these areas, perchlorate has been produced and used nationwide. The Department of Defense and NASA have used most of the perchlorate made in the United States.

## Known Health Effects

The health effects of perchlorate are known from human and animal testing where perchlorate was used as a medication for hyperthyroidism (Graves Disease). Perchlorate disrupts the thyroid gland's ability to properly utilize iodine to produce thyroid hormones. Thyroid hormone deficiencies can affect normal metabolism, growth and development. Known effects on thyroid and pituitary systems raise concerns for long-term effects of low concentrations on children, developing fetuses and older adults. The effects of perchlorate on infants and older adults are untested. California Department of health has established an interim drinking water standard of 18 parts per billion.

## Concerns

- Current location data on perchlorate is limited but growing as testing methods improve and "at risk" sites are identified.
- The known health effects have long-term medical and economical impacts.
- The drinking water supply of millions of people is affected.
- Developing an effective method for the removal of perchlorate from our water supplies is imperative.
- The problems of disposal, storage and handling of this highly volatile material must be addressed.
- Economic impacts are unknown at this time.

# Sponsors:



The mission of the **American Water Works Association** is to advance the science of water to improve the quality of life. AWWARF's research program focuses on six key issues: (1) Protecting the drinking water consumer from microbial risk, (2) Protecting the drinking water consumer from adverse health effects due to chemicals, (3) Improving utility management to obtain optimum water quality and system reliability, (4) Improving utility infrastructure for the reliable delivery of high-quality drinking water to the consumer's tap, (5) Providing science and technology to the drinking water community to improve public and consumer relations, and (6) Ensuring access to, and use of, water resources and protection of the environment.

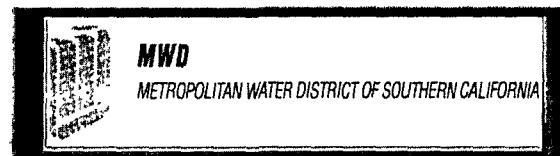
The **East Valley Water District** covers an area of approximately 25 square miles. Approximately 15 percent of the District is located in the unincorporated area of San Bernardino County and the remaining 85 percent is located within the city of San Bernardino and the City of Highland. The District has been engaged in furnishing water and sewer service to its customers since its inception. The initial sewer trunk lines and collection system were completed during the 1959-60 fiscal year. The District has a service population of approximately 56,000.



The **Main San Gabriel Basin Watermaster** is a nine-person board appointed by the Los Angeles County Superior Court. It administers and enforces the provisions of the judgment which established water rights and the responsibility for efficient management of the quantity and quality of the basin's groundwater.

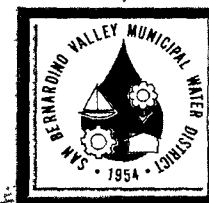
adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

The mission of the **Metropolitan Water District of Southern California** is to provide its service area with



The mission of the **Southern Nevada Water Authority** is to provide a safe, reliable water supply and serve our customers in a responsible manner.

The **San Bernardino Valley Municipal Water District** is a special district responsible for long-range water supply planning, water importation, and groundwater management in western San Bernardino County, California. The district spans the eastern two-thirds of the San Bernardino Valley and a portion of the Yucaipa Valley, and includes the cities and communities of San Bernardino, Colton, Loma Linda, Redlands, Rialto, Bloomington, Highland, Grand Terrace, and Yucaipa. The district was incorporated in 1854 under the Municipal Water District Act of 1911.



**Riverside Public Utilities**, a community-owned utility. It provides essential water and electric services to more than 250,000 people in the City of Riverside. Riverside began developing a public water system in 1913 with the purchase of the domestic systems and water rights of three area water companies. Riverside's water supply begins as rain and snow in the San Bernardino Mountains. This high-quality water is naturally filtered through the sand and gravel of the Bunker Hill Basin in San Bernardino and Riverside Basin in Riverside. These underground pools of water are tapped for domestic use by 47 wells operated by Riverside Public Utilities. In 1998, Riverside met 99.6 percent of its water needs from its own groundwater resources. Thanks to an independent water supply, Riverside Public Utilities' water rates are among the lowest in Southern California.

# Schedule:

**Wednesday, March 17, 1999**

2:00 p.m. - 5:00 p.m. Pre-Registration and Booth Setup  
6:00 p.m. - 9:00 p.m. Welcome Reception (Room 127)



*The ISEP+ Trailer will be on display in the parking lot adjacent to the conference booth area.*

7:00 a.m. - 4:30 p.m. Registration



8:00 a.m. - 8:05 a.m.

Harvest Room—Welcome Comments/Introduction: Edward S. Negrete



8:05 a.m. - 8:15 a.m.

Harvest Room—Opening Comments: Robert Martin, General Manager, East Valley Water District

- **Purpose of Conference:** To provide a better understanding of the accomplishments of all groups and the exchange of ideas
- **Purpose of General Sessions:** To provide a group exchange of ideas and to provide a better understanding of challenges facing different groups and organizations
- **To address the Concerns and Questions of All Groups Affected.**

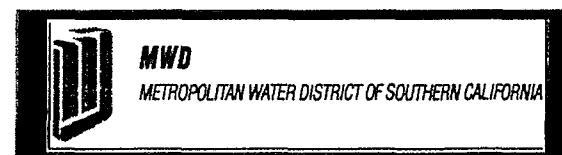


8:15 a.m. - 9:20 a.m.

Harvest Room—DEFINING THE PROBLEMS, CONCERNS AND NEEDS FACING WATER PROVIDERS: *"Facing the Community and the Bottom Line"*

Moderator: Robert Martin, General Manager, East Valley Water Agency

8:15-8:20 Moderator Introduction  
8:20-8:30 Main San Gabriel Basin Watermaster Carol Williams, Executive Director  
8:30-8:40 Southern Nevada Water Authority Kay Brothers, Director  
8:40-9:00 MWD Mark Beuhler, Director of Water Quality  
9:00-9:10 SBVMWD G. Louis Fletcher, General Manager  
9:10-9:20 Q&A  
9:20-9:25 Panel Change

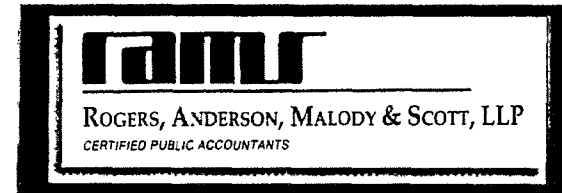


9:25 a.m. - 10:30 a.m.

**Harvest Room—COMPREHENSIVE RISK CHARACTERIZATION:** *Public Concerns Addressed through the Regulatory Process*

**Moderator:** Lt. Col. Dan Rogers

9:25-9:30 Moderator Introduction  
9:30-9:40 Annie Jarabek  
9:40-9:50 Mike Osinski  
9:50-10:00 Debbie Brink  
10:00-10:10 Steve Book  
10:10-10:15 **Combine Panels and Moderators for Q&A**  
10:15-10:30 Q&A



10:30 a.m. - 10:45 a.m. **Break—Sponsor: Rogers, Anderson, Malody & Scott**

10:45 a.m. - 12 Noon

**Lake Arrowhead & Lake Gregory Meeting Room—REGULATORY ISSUES**

**Moderator:** Steve Book

10:45-10:50 Moderator Introduction  
10:50-11:10 Steve Book  
11:10-11:30 Kevin Mayer  
11:30-11:50 Mike Osinski--Federal Issues  
11:50-12:00 Q&A

**Grove Meeting Room—INTRODUCTION TO PERCHLORATE**

**Moderator:** Jeanne-Marie Bruno

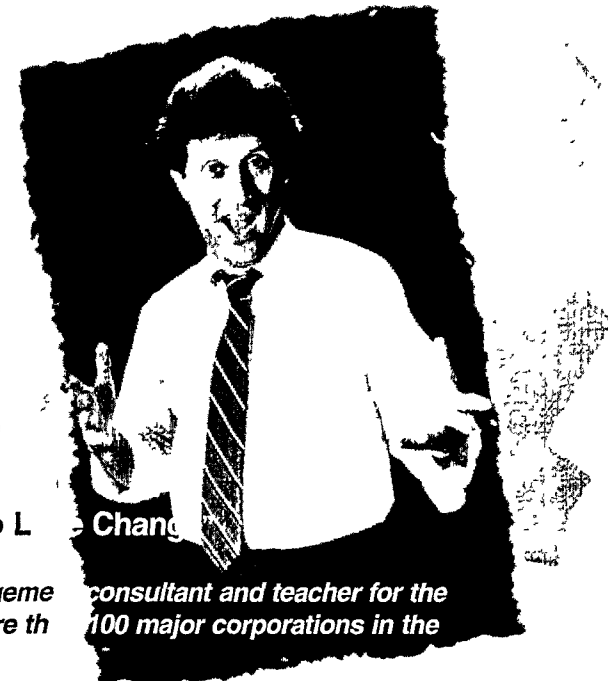
10:45-10:50 Moderator Introduction  
10:50-11:20 Frank Blaha, AWWARF  
11:20-11:50 Hsia-Chiu Wang--National Assessment of Perchlorate Contamination Occurrence  
11:50-12:00 Q&A

12 Noon - 1:30 p.m. **LUNCH—Guest Speaker: Tom P. Steiner, Ph.D. "Learning to Live with Change"**

*Dr. Tom Steiner has been a professional speaker, entertainer, management consultant and teacher for the past 15 years. He has provided presentations and training programs to more than 100 major corporations in the U.S. and Canada. He performs more than 200 engagements annually.*

*Dr. Tom combines his talents in a way that makes learning FUN! By using humor, magic and advanced common sense, his highly stimulating management training programs motivate participants to consider new ways of behaving in the workplace.*

*Dr. Tom has worked as a director of corporate training, a university professor, an elementary school principal, a stand-up comic, a rock-and-roll guitarist and a part-time U.S. postal employee. However, he credits most of what he has learned to driving taxi cabs and selling door-to-door in New York City. He knows what makes people tick and he talks about it.*



# Schedule:

**Thursday, March 18 (cont'd.)**

**1:30 p.m. - 2:30 p.m.**

**Lake Arrowhead & Lake Gregory Meeting Room--TECHNICAL ANALYTICAL METHODOLOGY**

**Moderator:** Debbie Brink, AWWARF

- 1:30-1:35 Moderator Introduction
- 1:35-1:50 Sanwat Chaudhuri
- 1:50-2:05 Steve Baxley
- 2:05-2:20 David Tusi
- 2:20-2:30 Q&A



**Grove Meeting Room--SITE-SPECIFIC PROBLEMS**

**Moderator:** Paul Dolter

- 1:30-1:35 Moderator Introduction
- 1:35-1:50 Gary Yamamoto, Section Chief/CAHD
- 1:50-2:05 Kay Brothers
- 2:05-2:20 Earl Hawes
- 2:20-2:30 Q&A



**2:30 p.m. - 3:25 p.m.**

**Lake Arrowhead & Lake Gregory Meeting Room--TREATMENT RESEARCH**

**Moderator:** Wayne Praskins

- 2:30-2:35 Moderator Introduction
- 2:35-3:00 Update on the Determination of Trace-Level Perchlorate in Drinking Water, Groundwater by Ion Chromatography--P.E. Jackson
- 3:00-3:25 Bacterial Reduction of Perchlorate and Nitrate in Groundwater by Per1ace--William T. Frankenberger, Jr.

**Grove Meeting Room--CASE PERSPECTIVES**

**Moderator:** Kevin Mayer

- 2:30-2:35 Moderator Introduction
- 2:35-2:50 East Valley Water District/AWWARF and Congress--Fred Hicks
- 2:50-3:05 Main San Gabriel Basin Watermaster--Carol Williams, Executive Director
- 3:05-3:20 Magna Water Company--Ed Hanson

**3:25 p.m. - 3:35 p.m. Break--Sponsor: Brunick, Alvarez & Battersby**

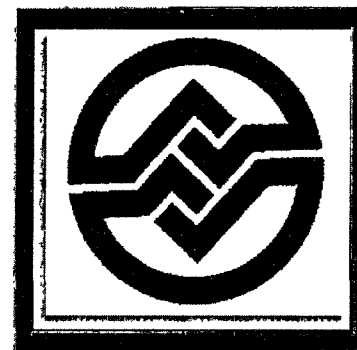


3:35 p.m. - 5:05 p.m.

**Lake Arrowhead & Lake Gregory Meeting Room--TREATMENT RESEARCH**

**Moderator:** Zahra Panahi

- 3:35-3:40 Moderator Introduction
- 3:40-4:05 Contaminated Waters Using Innovative Bioreactor--Bruce E. Logan
- 4:05-4:30 Operation on First Full-Scale Groundwater Treatment Facility for Perchlorate, Sacramento, CA--Michael Girard
- 4:30-4:55 ISEP+ System for the Removal and Destruction of Perchlorate and Nitrate from Contaminated Groundwater--Raman Venkatesh
- 4:55-5:05 Q&A



**Grove Meeting Room--CASE PERSPECTIVES**

**Moderator:** Kay Brothers

- 3:35-3:40 Moderator Introduction
- 3:40-4:00 Steve Book, Perchlorate MCL
- 4:00-4:20 Air Force Technology Development Transition and Transfer--Jim Hurley
- 4:20-4:35 Brazos River Authority--Mike Meadows
- 4:35-4:50 Rancho Cordova--Larry Ladd
- 4:50-5:00 Q&A



5:05 p.m. - 5:10 p.m. Short Break

5:10 p.m. - 6:00 p.m.

**Harvest Room--TREATMENT TECHNOLOGY PLANNING, INNOVATION**

**Moderator:** Jim Hurley

- 5:10-5:15 Moderator Introduction



# Schedule:

**Friday, March 19**

**8:00 a.m. - 10:00 a.m. Registration**

**8:00 a.m. - 9:00 a.m. Toxicology Health Effects/Ecosystems Strategies**

**Harvest Room--Good Morning Remarks: Bob Bowcock**

8:00-8:05 Moderator Introduction  
8:05-8:20 Annie Jarabek  
8:20-8:35 Davie Mattie  
8:35-8:50 Mike Osinski  
8:50-9:00 Q&A



**9:00 a.m. - 9:15 a.m. Morning Break--Sponsor: Rogers, Anderson, Malody & Scott, LLP**

**9:15 a.m. - 12 Noon**

**Lake Arrowhead & Lake Gregory Meeting Room--TREATMENT RESEARCH**

**Moderator: Jim Hurley**

9:15-9:20 Moderator Introduction  
9:20-9:45 TREATABILITY of Perchlorate-Containing Waters by Reverse Osmosis and Nanofiltration--Dr. Sun Liang, Ph.D., P.E., Senior Engineer, MWD of Southern California  
9:45-10:10 Application of Ion Exchange for Perchlorate Removal--Issam Najm, Ph.D., P.E.  
10:10-10:35 Perchlorate Biodegradation: Drinking Water, Groundwater and Waste Water Application--Edward Coppola, Perchlorate Biodegradation  
10:35-11:00 Removal of Perchlorate in Groundwater Using Ion Exchange--Dennis Clifford  
11:00-11:25 Investigation of Methods for Perchlorate Destruction in Aqueous Waste Streams--First Award--Fred S. Cannon  
11:25-11:50 Investigation of Methods for Perchlorate Destruction in Aqueous Waste Streams--Second Award--Thomas Theis  
11:50-12:00 Q&A--Introduction: Skip Wilson

**Grove Meeting Room--CASE PERSPECTIVES**

**Moderator: James Kuykendall**

9:15-9:20 Moderator Introduction  
9:20-9:35 ACWA Issues Facing Water Agencies--Krista Clark  
9:35-9:50 Perchlorate Study Group: An Industry Perspective--Michael Girard  
9:50-10:05 Ecological Impacts/Transport and Transformation--Cornell Long  
10:05-10:20 Colorado Indian Tribes--R. Dillon Esquerre, Water Technician  
10:20-10:25 Change of Panel

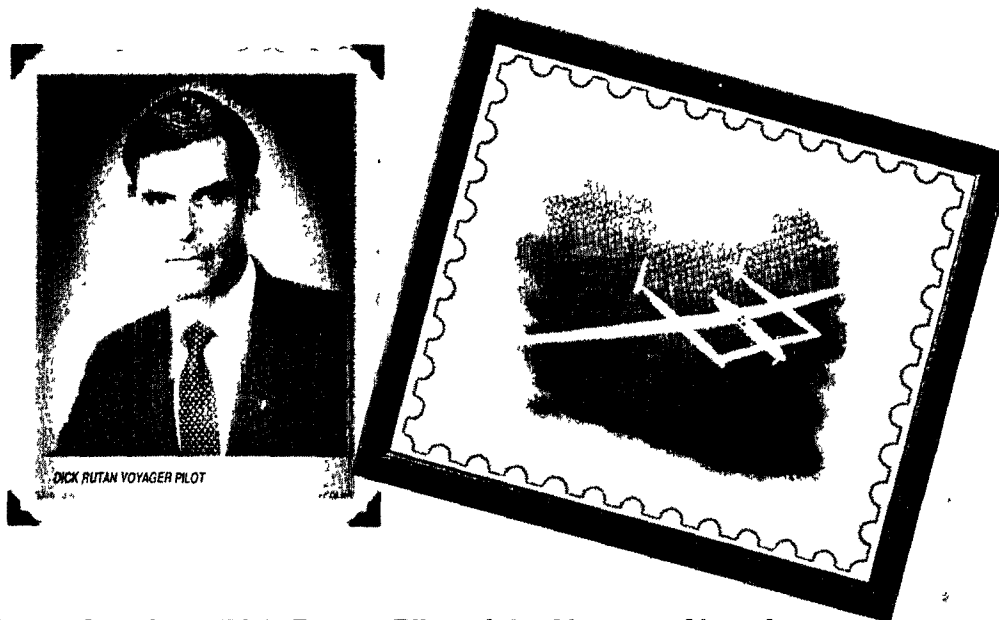




## Grove Meeting Room--FINDING THE RESOURCES

**Moderator:** Carol Williams

- 10:25-10:30 Moderator Introduction
- 10:30-10:50 Superfund--Kevin Mayer
- 10:50-11:10 AWWARF--Deborah R. Brink
- 11:10-11:30 Collaborative Teaming: Perchlorate Partnerships for Success--Dave Mattie, Research Toxicologist
- 11:30-11:50 Fieldman, Rolapp and Associates Public Financing/Funding Options--Thomas M. DeMars, Principal
- 11:50-12:00 Q&A



DICK RUTAN VOYAGER PILOT

## 12 Noon - 1:30 p.m. LUNCH--Guest Speaker: Dick Rutan, Pilot of the Voyager Aircraft "The Only Nonstop and Unrefueled Flight Around the World"

*As pilot of Voyager Aircraft's nonstop and unrefueled flight around the world in December of 1986, Dick Rutan put Mojave on the map and placed himself in the history books. The remarkable records set on that nine-day, three-minute and forty-second flight remain unchallenged, even after more than a dozen years.*

*Since Voyager's world flight, Dick has been traveling the world on the lecture circuit telling his tales of the magnificent Voyager project and flight. The Voyager story is one of courage, vision and adventure, and is often referred to as "aviation's last first."*

1:30 p.m. - 2:50 p.m.

## Lake Arrowhead & Lake Gregory Meeting Room--TREATMENT RESEARCH

**Moderator:** Kay Brothers

- 1:30-1:35 Moderator Introduction
- 1:35-2:00 Purification of Groundwater Contaminated with VOCs, Perchlorate, NDMA, and 1,4-Dioxane with an Integrated Treatment Train Comprised of Air Stripping/GAC, Continuous Ion Exchange and UV/Oxidation--R.D. Samuel Stevens
- 2:00-2:25 Remediation of Source Contamination--James R. Hunt
- 2:25-2:50 Treatment of NDMA in Drinking Water--Keith Bircher

# Schedule:

**Friday, March 19 (cont'd.)**

**Grove Meeting Room--PUBLIC AWARENESS**

**Moderator:** Bob Bowcock

- 1:30-1:35 Moderator Introduction
- 1:35-1:55 *Las Vegas Review Journal*--Keith Rogers
- 1:55-2:15 USAF--Dan Rogers
- 2:15-2:35 EPA--Catherine McCracken
- 2:35-2:50 Q&A

**2:50 p.m. - 3:00 p.m. Break**

**3:00 p.m. - 4:30 p.m.**

**Lake Arrowhead & Lake Gregory Meeting Room--TREATMENT RESEARCH**

**Moderator:** David M. Mattie

- 3:00-3:05 Moderator Introduction
- 3:05-3:30 Treatment Technology--Jim Hurley
- 3:30-3:55 Removal of Nitrate from Potable Water Using ISEP, Continuous Ion Exchange Systems--Charles Drewry
- 3:55-4:20 Removal of Perchlorate and Bromate in Conventional/Ozone/GAC Systems--Vernon L. Snoeyink, Ph.D.
- 4:20-4:30 Q&A

**Grove Meeting Room--PUBLIC AWARENESS**

**Moderator:** Jean Marie Bruno

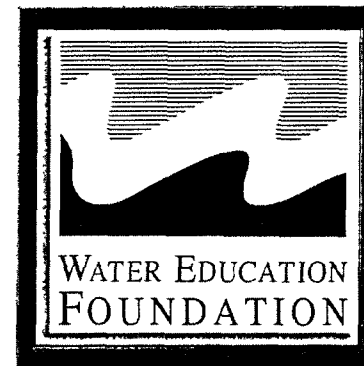
- 3:00-3:05 Moderator Introduction
- 3:05-3:30 Issues of Legal Liability--Nossaman, Guthner, Knox & Elliott, LLP--Frederic A. Fudacz
- 3:30-3:55 Brunick, Alavarez & Battersby--McElhaney, Leland
- 3:55-4:20 AIG Environmental--David T. Osmena, Manager, Environmental Division
- 4:20-4:30 Q&A

**4:30 p.m. - 4:35 p.m. Short Break**

**4:35 p.m. - 5:30 p.m.**

**Harvest Room--Assessment Issues/Peer Review/The Path Forward**

**4:35 p.m. - 4:45 p.m. Chet Anderson:** Short overview of conference followed by open panel for questions.



**State Water Contractors**

4:45 p.m. - 4:50 p.m.

**Short Introductions**

Panel Members: Lt. Col. Dan Rogers ✓  
Annie Jarabek ✓  
Kevin Mayer ✓  
~~Dave Spath~~ ✓  
Steve Book ✓  
Kay Brothers ✓  
Carol Williams ✓  
Jeanne-Marie Bruno ✓  
Debbie Brink ✓  
Mike Osinski ✓

5:25 p.m. - 5:30 p.m. Closing Remarks: Bob Martin



*Thank you for being a sponsor and supporter of the Perchlorate Conference:*

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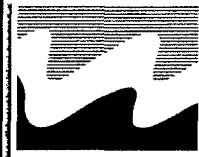
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